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EXPLORING FACTORS AND CONSEQUENCES OF NURSE FATIGUE IN NURSES WHO
WORK ON-CALL SHIFTS

By

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A Thesis

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ABSTRACT

Purpose: On-call shifts are used for unpredictable hours in addition to regular shifts at many hospitals. The purpose of this study is to explore the factors related to nurse fatigue in nurses who work on-call shifts, as well as identifying the consequences of call-shift related fatigue on these nurses.

Design: A descriptive qualitative design will be used.

Methods: A qualitative self-report technique will be used in this study known as semi-structured interviews. These interviews will be of a small sample size to allow time and opportunity for intimate and extensive interactions with the study participants.

Data Analysis: A selective approach, in which statements and phrases relevant and essential to the study will be highlighted, will be used to interpret narrative data in this study.

Potential Clinical Relevance: This study can be beneficial to nursing by bridging the gap within nurse fatigue literature and providing more literature specific to nurses whom work on-call.

Hopefully, this study will provide information to nurses, nurse leaders and administrators to aide in effectively addressing on-call shift related nurse fatigue. With more information, the nursing community can mutually agree on goals to minimize, resolve, or eliminate the issue completely.

Keywords: on-call fatigue, on-call shift, nurse fatigue, call shift fatigue, call hours fatigue

Exploring Factors and Consequences of Nurse Fatigue in Nurses Who Work On-Call Shifts

Chapter 1: INTRODUCTION

Multiple care units, such as the Post-Anesthesia Care Unit (PACU), Operating Room (OR), and cardiac catheterization lab have nurses staffed for on-call shifts after regular operating hours. These shifts can range from a few hours overnight after a standard work shift to multiple days at a time. The purpose of on-call shifts is to have a team available for emergencies that may occur when the unit is typically “closed”. When a nurse is working an on-call shift in one of these units, he or she must respond to emergency pages and report to work within a specific time frame to assist with the emergency. For example, cardiac catheterization labs do not schedule procedures outside of normal 8am-5pm hours. However, a heart attack can occur at 2am and require immediate action. Therefore, there must always be staff on-call to handle such critical emergencies.

There is extensive literature regarding the complex and multidimensional characteristics of work-related nurse fatigue. However, there is a lack of literature exploring this phenomenon within the population of nurses that work on-call shifts. Although the number of nurses working in specialty areas with on-call shifts is only a fraction of staff nurses within a hospital at any given time, the possibility of fatigue experienced by these nurses is not any less important to understand.

Statement of the Problem

The US Workforce has an estimated 38% of workers that experience work-related fatigue, yet some studies show between 71% and 92% of nurses reported experiencing work-related fatigue sometimes, often, or very often (Smith-Miller, Shaw-Kokot, Curro & Jones, 2014). Higher demands of the individual’s workplace or care unit were associated with higher

levels of fatigue (Smith-Miller, et al., 2014). Patient outcomes are worse when nurses are fatigued and nurses are more susceptible to making mistakes inside and outside of the workplace when experiencing this exhaustion (Smith-Miller, et al., 2014).

Type of Study

This study uses the qualitative method because non-numerical (or narrative) data and inductive reasoning was used (Bui, 2014). There is nominal data collected and there was a need to study the experiences of the individuals related to this phenomenon. These individuals had the experiences and expertise to help highlight the experiences relevant to the topic being studied. There is limited research specific to the impacts on nurses who work on-call shifts. Therefore, a small sample size was used to allow time and opportunity for intimate and extensive interactions with the study participants.

Theoretical Perspective

This study explores the lived experiences of nurses who work on-call shifts through a descriptive qualitative design with a phenomenological approach (Polit & Beck, 2017). Phenomenology is a research method widely used in the social sciences; descriptive phenomenology is used to directly explore and describe the lived experiences of individuals. This study will be based on the theoretical perspective of Betty Neuman's Systems Model. Neuman's model focuses on human needs of protection or relief from stressors while the human is viewed as a holistic individual who reacts to said stressors (McEwen & Willis, 2014). She emphasized the need for balance through the identification of the problem(s), choosing goals, and the concept of prevention as the intervention. From the nursing perspective, the goal is to maintain stability within the human system while actively assessing the environmental (and/or other) stressors, and then assisting the human to make the necessary adjustments to maintain an

optimum level of wellness. While this theory is typically directed at patient care, it is universal and applicable to a variety of individuals from different backgrounds (McEwen & Willis, 2014). Detailing the lived experiences of some of this population of nurses will help identify the impacts of working on-call shifts, or at the very least narrow it down to a group of problems.

Assumptions

Assumptions for this proposed study include: 1) participants will be honest and candid in their responses; and 2) the inclusion criteria are appropriate, and the participants are relevant to the study.

Limitations

One limitation of this study is that it will only be conducted at one organization, instead of across multiple hospitals so it may be difficult to gain access to a variety of participants. This is my first formal research study; therefore, the study may be on a beginner's level. Also, phenomenology requires interpretation; therefore, being a member of the population being studied may result in some researcher bias. However, the research team will also include two faculty researchers who have experience with qualitative research, which will help support and strengthen the interpretation.

Relevant Concepts

Fatigue: extreme tiredness resulting from mental or physical exertion

Nurse: A licensed, registered nurse responsible for the healthcare of patients.

Nurse fatigue: Physiological and/or psychological exhaustion beyond tiredness experienced by nurses related to working or the workplace.

On-Call Shift Fatigue: Physiological and/or psychological exhaustion beyond tiredness related to working on-call shifts.

Purpose

The purpose of this study is to explore the impact of working on-call shifts for nurses in specialty units. The original purpose was to explore fatigue associated with working on-call shifts but through the focus group interview other issues were identified. Gaining an understanding of these factors and consequences can potentially inform nurses and organizational administrations on the impacts of on call shift related fatigue.

Research Questions

The research questions fueling this study include:

1. What are the factors related to nurse fatigue of nurses who work on-call shifts?
2. What are the consequences of nurse fatigue related to working on-call shifts?

Background and Significance

A nurse is called in to work emergently at 2:00 a.m., disrupting her normal circadian rhythm, for a patient experiencing an ST-segment elevation myocardial infarction. She has worked a 10-hour shift already the day before with another 10-hour shift beginning at 7:00 a.m. this same morning. She has 30 minutes to get dressed, tend to personal hygiene, and arrive at work; all while still feeling drowsy from being awakened in the middle of the night. On the way to work, she drives in a daze, running a red light and being hit by another driver, losing her life as a result. While this example may seem extreme, it is a very real possibility for nurses who work on-call shifts.

Chen, Davis, Daraiseh, Pan, and Davis (2014) reported reasonable to high levels of acute fatigue and reasonable levels of chronic fatigue and inter-shift recovery in a single study. A different study by Caruso (2015) reported that long work hours can significantly increase health and safety risks. According to McClelland, Switzer, and Pilcher (2013) nurses' judgment is

significantly altered throughout their 12-hour day shifts. While the cause of the alterations in judgment was not in favor of any one particular factor, it sheds light on the risks that on-call nurses face after working a regular full shift then having to return to work while on call.

Because of these possibilities, understanding on-call shift related fatigue is important. There is a strong body of evidence showing that nurse fatigue has adverse effects. However, the evidence related to fatigue in nurses who work on-call shifts is less clear.

Chapter 2: LITERATURE REVIEW

On-call shifts require nurses to be available on short notice during any given time period that having a full staff present may not be necessary. To better understand on-call shift related impacts, a review of literature is needed. In this chapter, a review of the research question will be explored.

On-Call Shift Fatigue

Domen, Connelly, and Spence (2015) directed a nonexperimental quantitative study of 325 Certified Registered Nurse Anesthetists (CRNAs), with 33 of them being military CRNAs. The intent of this study was to question CRNAs of the American Association of Nurse Anesthetists (AANA) on frequency of call-shift fatigue, signs of fatigue, medical errors related to fatigue, and use of measures to counteract and avoid fatigue. A supplementary aim of the study was to identify fatigue from on-call shifts. Study findings showed an unfortunate 82% of participants admitted to suffering fatigue during call-shifts occasionally, frequently, or often. The other 18% reported experiencing it rarely. About two-thirds of participants experienced physical or psychological symptoms related to fatigue. Participants reported using countermeasures and avoidance strategies 87% and 77% of the time, respectively. Also, almost one-third of participants admitted to committing a patient care error related to levels of fatigue. Domen et al. (2015) conclude their study by determining that fatigue from working on-call shifts is common among CRNAs and is linked with negative personal health and increased patient care errors as evidenced by study findings.

Chen, Davis, Daraiseh, Pan, and Davis (2014) performed a cross-sectional, descriptive study of 130 RNs from acute care hospitals in the U.S. The purpose of this study was to examine the presence of acute fatigue, chronic fatigue, and inter-shift recovery amongst 12-hour shift

nurses. Study results show participants reported reasonable to high levels of acute fatigue and reasonable levels of chronic fatigue and inter-shift recovery. These levels varied based on uncontrollable individual factors, but the average scores for acute fatigue were higher in nurses working shifts lasting 12 hours than nurses working shifts eight hours or less. Overall, the participants reported an unhealthy fatigue recovery process. Chen et al. (2014) conclude the study by recommending administration, managers, and staff nurses share the responsibilities of a healthy fatigue recovery process for the benefits of the nurses as well as the patients.

Caruso (2015) provided a meta-analysis review of women in shift work. The aim of this review was to give a synopsis of the risks linked to shiftwork, long work hours, and workplace fatigue issues, as well as describe activities to lessen these risks to women. Caruso (2015) determined shift work and long work hours significantly increase health and safety risks by increasing exposure to work hazards, breaking sleep and circadian rhythms, and decreasing time for family and other personal responsibilities. The study concluded that there was significant evidence that insufficient sleep and fatigue can lead to detrimental health and safety issues, endangering the individual and others around them. Caruso (2015) suggests that for this reason, sleep should be a priority for employer's work systems.

Thériault et al. (2018) led a descriptive, quantitative study of 10 urology residents at a hospital in Quebec, Canada. Researchers used questionnaires with a 5-point Likert scale to evaluate the relevance of calls received during call shifts and the residents' perceptions of these calls with aims to reduce unnecessary calls and decrease workload of on-call shifts. Residents received nearly four calls per weeknight and almost eight calls per weekend day generally in relation to new consults, necessary bedside evaluations, or possible emergency surgery (Thériault et al., 2018). Study results revealed that residents perceived over three-fourths of calls

received as relevant. The study concludes by suggesting further studies of on-call shifts for residences to improve workloads.

A quantitative, descriptive study was conducted by Heponiemi, Puttonen, and Elovainio (2014) to determine if working on-call shifts could predict job satisfaction, psychological distress, or ability to work. After randomized sampling, eligible participants totaled 1,541 physicians in Finland. Participants were given questionnaires using the 5-point Likert scale. Results from this study show that on-call shifts were associated with sleeping problems, work interference with family, inability to work, job dissatisfaction, and distress. The physicians' ability to fall sleep, stay asleep, or go back to sleep after being awakened were significantly reduced (Heponiemi et al., 2014). The study concludes by suggesting arrangements be made to promote a healthier work-life balance and quality sleep.

Ziebertz et al. (2015) conducted a cross-sectional survey of 157 Dutch employees who work on-call shifts. The study aimed to explore the relationship between the lived experiences of employees while on call off-site and the exposure to being on call in relation to fatigue, work-life balance, and ability to perform. For part of the survey, participants were given a condensed version of the Fatigue Assessment Scale and answered using a 5-point Likert scale to assess fatigue. Study results show that most participants felt constrained while working-on call, over 30% reported their lack of control over being called to work left them somewhat stressed, and more than 26% of participants reported difficulties relaxing while on call (Ziebertz et al., 2015). While the researchers acknowledge that further research is needed, the study concludes by suggesting that the experience of being on call is more associated with generalized fatigue, work-life imbalance, and decreased ability to work than being called in to work. Lastly, Ziebertz et al.

(2015) recommend further investigating ways to improve the experience of being on-call to decrease the adverse effects.

Consequences of On-Call Shift Fatigue

An integrative review by Smith-Miller, Shaw-Kokot, Curro and Jones (2014) of nine studies across diverse care units within multiple hospitals in various countries determined shift work negatively affected sleep patterns and circadian rhythms among participants. The purpose of the study was to explore research related to nurse fatigue to develop fatigue management strategies for acute care hospital settings. Higher demands of the individual's workplace or care unit were associated with higher levels of fatigue. According to this review, lack of breaks led to emotional discomfort, decreased personal well-being, and further increased overall fatigue (Smith-Miller et al., 2014). The researchers concluded that implementing and practicing organization-wide fatigue reduction strategies and policies are critical in reducing nurse fatigue. Adherence to these policies should be mandated because tackling job-related factors of nurse fatigue could improve patient safety and outcomes, job satisfaction, and even reduce employer costs for high employee turnover rates (Smith-Miller et al., 2014).

A correlational study of 65 RNs in a southeastern U.S. hospital working a 12-hour day shift in various care units intended to conclude if there was a change in RNs' decision making over a 12-hour day shift (McClelland, Switzer, & Pilcher, 2013). Study findings show nurses' judgment was significantly altered across their 12-hour day shifts. However, the cause of the alterations in judgment was not associated with any one particular factor. In conclusion, nurses did not provide consistency in their judgment policies and the changes varied individually, demonstrating how the effects of fatigue and stress on judgment manifest themselves differently among individuals.

A non-experimental, quantitative study of 48 nurses working in three public Austrian nursing homes aimed to assess recovery from work during a three-day rest period after working two consecutive 12-hour day shifts (Blasche, Bauböck, & Haluza, 2017). Overall, study results show participants experienced the worst sense of well-being and the greatest drop in well-being on working days. However, their sense of well-being progressively increased from rest day 1 to rest day 2 to rest day 3. The study conclusion suggests that a minimum of three rest days are needed to fully recover from working two 12-hour shifts consecutively because an adequate recovery time allots for nurses to maintain their positive attitudes as well as promotes patient safety.

A total of 25,924 nurses from hospitals, nursing homes, and home care institutions in Europe participated in a descriptive study led by Estryn-Béhar and Van der Heijden (2012). The study's aim was to analyze the effects of various work schedules on work/family balance, health, and safety among numerous paramedical staff. The analysis of results demonstrated that lack of teamwork, job disturbances, and over-commitment are the top risk factors for health consequences in participants. Estryn-Béhar and Van der Heijden (2012) conclude that nurses willingly accepted night shifts and 12-hour shifts to decrease work/family conflicts at the cost of their health.

Knauss, Bonner, Patka, and Abraham (2015) conducted a month-long observational study of 10 pharmacy residents working on-call shifts overnight at Grady Health System in Atlanta, Georgia. The study's aim was to determine the effect of overnight call shifts on alertness of pharmacy residents. The rest activity patterns of participants were tracked via a wearable Actigraph monitor. Participants also completed psychomotor vigilance testing (PVT), documented sleep patterns in a sleep log, and used the Karolinska sleepiness scale (KSS) to self-

rate their levels of alertness for 31 days straight. Study results showed that 50% of residents reported interrupted sleep overnight and sleep quality averaged 5 out of 10 points on a Likert scale (Knauss, Bonner, Patka, & Abraham, 2015). However, the researchers concluded that there was no overall regression in alertness among the residences during the study.

Hall et al. conducted a systematic review of eight studies (2017) with the intent to define and classify the effects of on-call shifts on individual's stress physiology and sleep patterns when able to be on-call at home or outside of the physical workplace. The quality assessment tool known as the Effective public health practice project (EPHPP) was used for assessment purposes. According to this review, overall sleep quality and sleep quantity were both negatively affected in relation to being on-call from home (Hall et al., 2017). However, this systematic review only includes a single study of on-call shift as it relates to stress physiology and notes that there was no correlation found. The researchers concluded by reiterating that there is limited research and inadequate evidence to determine the effects of working on-call shifts from home on stress physiology and sleep.

Summary

Half of the studies reviewed here focus on working on-call shifts and consequences related to working on-call shifts. Also highlighted are the impacts of on-call shift work on work-life balance and wellbeing as well as its impact on family. Most studies depict the adverse effects of fatigue from working on-call shifts, including altered judgment and unbalance family-work life. However, very little current literature was found specifically regarding registered nurses who work on-call shifts. Therefore, more studies should be conducted to gain a better understanding of work-related fatigue and impact of working on-call in nurses who work on-call shifts. This study could potentially inform nurses and administrations about the risk of on-call

shift-related fatigue and other impacts such as the potential harm and safety concerns to nurses and patients.

Chapter 3: METHODS

A qualitative self-report technique was used in this study known as semi-structured interviews. The interview was a traditional focus group of a small purposive sample (n=5) of nurses currently working on-call shifts, to allow time and opportunity for intimate and extensive interactions with the study participants. The focus group interview session is useful because participants can interact with one another and possibly generate ideas that would not be available in one-on-one interviews. The participants also seemed more willing to discuss the topic in front of familiar peers.

Participants

The target population was registered nurses working at least part-time (24 hours per pay period) in an area/unit that requires working on-call shifts. Sample was based on a volunteer basis from a population to which the investigator had access. Volunteers were informed about the intended purpose of the study and reassured that withdrawal from the study is without repercussions is an option for all participants. Volunteer participants meeting this inclusion criteria participated in a focus group interview. The sample included five female registered nurses between the ages of 35 and 57. Three participants listed their ethnicity as White/Caucasian and the other two participants listed their ethnicity as Black/African American.

Measurement Instruments

Each participant completed a demographic tool (Appendix A) and signed a consent (Appendix B). The consent includes a description of the project, explanation of procedures, risks or discomforts, benefits, and confidentiality measures. Copies of these tools can be found in the Appendix of this study.

Procedure

Permission was gained from the Institutional Review Board (IRB) of Kennesaw State University and the administrators at the research site, a 150-bed acute care hospital in Louisiana, USA. The site was chosen because of the researcher's easy access to sample participants and limited possibilities for disruption during the study. Each participant was a registered nurse currently working on-call shifts in a specialty unit within the hospital. The researcher does not hold a supervisory position above any of the participants as to avoid the perception of coercion.

Using the interview guide (Appendix C), the focus group was led by the primary researcher until all questions were answered. The focus group interview was conducted in a quiet, secluded area within the unit to provide privacy. Participants sat at a round table in a private conference room to avoid distractions or influence from anyone not participating. Open-ended questions were asked to guide the conversation and cover all necessary data elements while allowing participants to honestly voice their experiences and perspectives. Prompts were used when needed to continue the flow of data collection from the study participants. The focus group was recorded and transcribed for data recollection while maintaining privacy as promised. No names were noted on the transcript and confidentiality was assured via the transcript not having any identifying information. The transcripts were also double checked for accuracy upon completion. During the initial focus group, the participants were thanked for their time and contributions.

Data Analysis

The phenomenological strategy of inquiry was used to understand the unique aspects of this human phenomena. Phenomenology is an approach that concentrates on the study of consciousness and the objects of direct experience (Polit & Beck, 2017). Field notes were taken

the day of the focus group interview to note the setting, surrounding, and observations. The interview was audiotaped and then transcribed. After the transcription, a first level analysis of the interview was completed then the transcript was sent to two experienced qualitative researchers. Each reviewer independently coded the responses from the focus group transcript and grouped them into categories. A research team conference call was held to review our interpretation of the data using an analysis approach. Following this conference call, a follow-up conversation was held electronically with participants to further review the findings. In this follow-up, consensus on the main themes was reached to further validate the findings.

It is also important to scrutinize the trustworthiness of every phase of the analysis process, including the preparation, organization, and reporting of results (Polit & Beck, 2017). Revisiting the findings with the participants also adds to the level of trustworthiness of the findings. Together, these phases should give a clear indication of the overall trustworthiness of the study. Data for this study has been collected, read, and re-read for clarity and accuracy. Quotes were highlighted and grouped in three categories, or themes, to emphasize the experiences of the participants.

Chapter 4: RESULTS

This chapter contains the results of the descriptive qualitative study conducted to answer the research questions:

RQ1: What are the factors related to nurse fatigue of nurses who work on-call shifts?

RQ2: What are the consequences of nurse fatigue related to working on-call shifts?

The participants expressed the impact of on-call shifts on their health, stating that it has led to weight gain and unhealthy eating habits. The long and changing hours that are synonymous with working on-call shifts have also notably led to fatigue experienced by the participants. Similar to the studies conducted by Hall et al. (2017) and Smith-Miller, Shaw-Kokot, Curro and Jones (2014), overall sleep quality and sleep patterns were both reportedly affected in relation to working on-call shifts. The primary objective for this study was to find nurse fatigue as a key theme related to working on-call shifts. However, there was a lack of emphasis on fatigue in the findings. While it was not found as a key theme, other key themes were noted related to working on-call shifts. Three key themes to take away from the focus group interview are identified as “deal with it”, family and lifestyle adjustments, and unpredictability.

“Deal with It”

First, is the common theme of “deal with it” that on-call shift nurses have expressed throughout the interview by saying things like, “Plan stuff when you aren’t on-call,” and, “Take your [work] shoes with you everywhere you go.” When working on-call shifts, the nurses have expressed that they bring a pair of work shoes with them to do simple tasks like run errands or go to a child’s birthday party. This way, the nurse can be prepared to go to the hospital within the designated time frame.

One nurse also suggested taking two separate vehicles, or methods of transportation, when leaving the house during an on-call shift to avoid leaving anyone stranded if work calls. This allows the nurse to still have flexibility to attend events with others even while on-call. Traveling alone allows the nurse to leave when necessary without disrupting anyone else. Nurses working on-call must be mindful of this amongst other things when attending events during their on-call shift.

Another nurse commented about her sleep schedule being “thrown off” because of the irregular, demanding hours of on-call shifts. Sleep is vital for any well-functioning human; therefore, nurses must adapt quickly to compensate for the irregular sleep patterns. Coping with this lifestyle is essential to being successful in this role, as the more experienced nurses mentioned. This theme of “deal with it” ultimately means not pouting over the many possible scenarios of how on-call shifts can affect your personal life. Instead, you just deal with it and go with the flow, allowing yourself to remember the ultimate goal of saving lives.

Family and Lifestyle Adjustments

The second common theme is family and lifestyle adjustments as evidenced by comments about missing important events: holidays, birthdays, anniversaries, yet their families “adjusted” as needed. Nurses admitted to avoiding on-call shifts or making arrangements for coverage of their shift when needing to be present for major life events for family and friends. The nurses also expressed occasionally having to attend events with the hopes of not having to leave or completely missing events if they were out of the required time frame to be at work.

A comment was made by a nurse about the significant weight gain she experienced from working on call due to unhealthy eating habits related to working hours. Working in healthcare, nurses understand the importance of healthy eating and taking care of oneself. However, as

expressed by multiple nurses, this is no easy feat. Participants reported often eating whatever was available just to keep up with their body's demands for food and energy to continue working.

Another nurse commented that when being out of the house with her younger children while being on-call, they knew that "if their mama's pager goes off, they better hurry up and run to the car" because that meant she had 30 minutes to get to work. Growing up while their mother worked on-call shifts, the family learned to adjust to living life and making changes on the go as needed. Other nurses agreed that their children also had to learn how to react in these moments when their mother had to suddenly get to work.

Unpredictability

Thirdly, the unpredictability of working on-call shifts was repeatedly expressed by participants in various comments such as, "You just don't know what to expect!" and, "You eat when you can." Since it is unpredictable as to when the page will be sent to summon an on-call nurse to the hospital, nurses have reported how those closest to them react with disappointment yet understanding as evidenced by a nurse in the focus group stating "they know it's your job but they are—they're not happy about it."

This unpredictability has even reportedly led to anxiety in nurses new to working on-call shifts. As mentioned previously, coping mechanisms are necessary to handle the unpredictability of this field of work. This also ties this theme into the theme of family and life adjustments. The unpredictability of working on-call shifts forces family and life adjustments to be made.

Summary

All in all, the focus group mostly agreed on the factors related to nurse fatigue and impacts of working on-call shifts. While fatigue wasn't a key theme related to on-call shift work, comments were made by the participants regarding generalized fatigue. One participant

commented how she's been extremely fatigued, but it was very rare and not specific to the type of shift that she was working. Participants of a research study by Smith-Miller et al. (2014) reported dangers such as increased overall fatigue when working shift work. The possibilities for danger are endless in daily life, including working on-call shifts. One participant even commented, "It's been many years since we've experienced something [that] extreme and it was only a few times," suggesting that some adverse effects of working are unspecific to on-call shifts, but extreme dangers are rare.

The key themes of "deal with it", family and lifestyle adjustments, and unpredictability were mutually expressed often; however, the nurses more experienced with on-call shifts seemed much more comfortable with accepting these issues. Consequently, there is a strong sense of the negative impact on family and individual lifestyle as well as health issues, such as poor eating habits. However, after years of experience, three of the five nurses mentioned their familiarity with these impacts and have learned how to adjust accordingly.

A follow-up focus group was planned to further validate the results of the study, but the participants' schedules did not align to allow for completion. Therefore, validation of these themes was requested electronically to further strengthen trustworthiness. The participants confirmed the main themes as being key points of focus and these findings were supported by the previous literature studied as evidenced by the discussed experiences of the nurses in the study.

Chapter 5: DISCUSSION

On-call shifts can have significant impacts on nurses. This study resulted in a broadening of the original scope of on-call shift fatigue. As the analysis indicated, other impacts were equally as important or presented stronger themes. The study results also pointed out how nurses newer to working on-call shifts (within the last five years) have expressed more stress and anxiety than those with more than five years of experience.

Limitations

One limitation of this study is that it was only conducted within one organization, instead of across multiple hospitals so it was difficult to gain access to a variety of participants. This is also my first formal research study; therefore, the study may be on a beginner's level. Lastly, phenomenology requires interpretation; therefore, being a member of the population being studied may result in some researcher bias.

Implications for Future Research

Further exploration into this research is needed, as this study did not have a significant focus on fatigue. The results of larger focus groups and/or across a broader area of departments could conclude differently than those of this study. Also, studying the impact of on-call shifts at different experience levels along with studying the impact of a mentoring program could further expose implications for nursing. Long-term studies of nurses new to on-call shifts as they progress into more experienced call shift nurses could also potentially provide more in-depth detail of the factors and consequences related to nurses working on-call shifts.

Implications for Practice

Nurses who had years of taking call had learned to incorporate this into their life and most no longer seemed as stressed about on-call shifts. Therefore, potential implications could

include more experienced nurses assisting nurses newer to on-call shifts in adjusting to the changes associated with these shifts. Support can be given to the newer nurses throughout orientation and beyond to stress the importance of coping with and/or avoiding the factors related to negative impacts of on-call shifts. The impact of this sort of mentorship has seemingly great potential!

Steege, Pinekenstein, Rainbow, and Arsenault Knudsen (2017) suggest that multiple opportunities exist to implement fatigue risk management systems (FRMS) in healthcare. Although healthcare organizations may have implemented strategies to address fatigue, most participants' organizations did not have a formal FRMS in place (Steege et al., 2017). Monitoring individual nurses' levels of fatigue and using tools to predict fatigue risk were rare, according to Steege et al. (2017). Therefore, nursing leaders, along with other organizational leaders, should develop a formal plan to monitor fatigue and implement multiple levels of interventions to prevent occupational fatigue and ease its consequences.

Implications for Education

Coping with fatigue and other consequences of working on-call shifts can be taught to nurses in need. Sharing specific coping mechanisms, including progressive muscle relaxation combined with music, has been proven effective in decreasing stress and fatigue in critical care nurses (Ozgundondu & Gok Metin, 2019). The adverse impacts on sleep and performance outcomes while on-call may be mitigated by the implementation of workplace systems to reduce the chance of missing alarms (e.g., having two available options for contacting on-call workers). These and similar practices can be implemented for nurses who work on-call shift.

Conclusion

This study was intended to identify factors and consequences related to nurse fatigue in nurses who work on-call shifts yet, fatigue was not seen as a major impact. Alternatively, three key themes were identified: “deal with it”, family and lifestyle adjustments, and unpredictability. However, the study concluded with broader impacts including, but not limited to, fatigue. Therefore, more research is needed to further identify the specific focus on nurse fatigue in nurses who work on-call shifts, as well as the other impacts that on-call shifts have nurses.

REFERENCES

- Bui, Y. N. (2014). *How to write a master's thesis*, (2nd ed.). Thousand Oaks, CA: SAGE Publications, Inc.
- Blasche, G., Bauböck, V.-M., & Haluza, D. (2017). Work-related self-assessed fatigue and recovery among nurses. *International Archives of Occupational & Environmental Health*, 90(2), 197–205. <https://doi-org.proxy.kennesaw.edu/10.1007/s00420-016-1187-6>
- Caruso, C. (2015). Reducing Risks to Women Linked to Shift Work, Long Work Hours, and Related Workplace Sleep and Fatigue Issues. *Journal of Women's Health*, 24(10), 789–794. <https://doi-org.proxy.kennesaw.edu/10.1089/jwh.2015.5481>
- Chen, J., Davis, K., Daraiseh, N., Pan, W., & Davis, L. (2014). Fatigue and recovery in 12-hour dayshift hospital nurses. *Journal of Nursing Management*, 22(5), 593–603. <https://doi-org.proxy.kennesaw.edu/10.1111/jonm.12062>
- Domen, R., Connelly, C. D., & Spence, D. (2015). Call-shift fatigue and use of countermeasures and avoidance strategies by certified registered nurse anesthetists: A national survey. *AANA Journal*, 83(2), 123–131.
- Estryn-Béhar, M., & Van der Heijden, B. I. J. M. (2012). Effects of extended work shifts on employee fatigue, health, satisfaction, work/family balance, and patient safety. *Work*, 41, 4283–4290.
- Hazzard, B., Johnson, K., Dordunoo, D., Klein, T., Russell, B., & Walkowiak, P. (2013). Original article: Work- and nonwork-related factors associated with PACU nurses' fatigue. *Journal of PeriAnesthesia Nursing*, 28, 201–209. <https://doi-org.proxy.kennesaw.edu/10.1016/j.jopan.2012.06.010>

- Hall, S., Ferguson, S., Turner, A., Robertson, S., Vincent, G., & Aisbett, B. (2017). Clinical review: The effect of working on-call on stress physiology and sleep: A systematic review. *Sleep Medicine Reviews*, 33, 79–87. <https://doi-org.proxy.kennesaw.edu/10.1016/j.smr.2016.06.001>
- Heponiemi, T., Puttonen, S., & Elovainio, M. (2014). On-call work and physicians' well-being: Testing the potential mediators. *Occupational Medicine (Oxford, England)*, 64(5), 352–357. <https://doi-org.proxy.kennesaw.edu/10.1093/occmed/kqu036>
- Knauss, M., Bonner, C., Patka, J., & Abraham, P. (2015). Evaluation of pharmacy resident alertness in an overnight on-call program. *American Journal of Health-System Pharmacy*, 72(14), 1215–1220. <https://doi-org.proxy.kennesaw.edu/10.2146/ajhp140338>
- McClelland, L. E., Switzer, F. S., & Pilcher, J. J. (2013). Changes in nurses' decision making during a 12-h day shift. *Occupational Medicine*, 63(1), 60–65.
- McEwen, M., & Wills, E. (2014). *Theoretical basis for nursing*. Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins.
- Ozgundondur, B. & Gok Metin, Z. (2019). Effects of progressive muscle relaxation combined with music on stress, fatigue, and coping styles among intensive care nurses. *Intensive and Critical Care Nursing*, 54, 54–63. <https://doi-org.proxy.kennesaw.edu/10.1016/j.iccn.2019.07.007>
- Polit, D., & Beck, C. (2017). *Nursing research: Generating and assessing evidence for nursing practice*. Philadelphia: Wolters Kluwer Health.
- Smith-Miller, C.A., Shaw-Kokot, J., Curro, B. & Jones, C.B. (2014). An integrative review: Fatigue among nurses in acute care settings. *Journal of Nursing Administration*, 44(9), 487–494.

- Steege, L. M., Pinekenstein, B. J., Rainbow, J. G., & Arsenault Knudsen, É. (2017). Addressing occupational fatigue in nurses: Current state of fatigue risk management in hospitals, part 1. *The Journal Of Nursing Administration*, 47(9), 426–433. <https://doi-org.proxy.kennesaw.edu/10.1097/NNA.0000000000000509>
- Thériault, B., Marceau-Grimard, M., Blais, A., Fradet, V., Moore, K., & Cloutier, J. (2018). Urology residents on call: Investigating the workload and relevance of calls. *Canadian Urological Association Journal*, 12(2), E71–E75. <https://doi-org.proxy.kennesaw.edu/10.5489/cuaj.4333>
- Ziebertz, C., van Hooff, M., Beckers, D., Hooftman, W., Kompier, M., & Geurts, S. (2015). The relationship of on-call work with fatigue, work-home interference, and perceived performance difficulties. *BioMed Research International*, (2015):1–10. <https://doi-org.proxy.kennesaw.edu/10.1155/2015/643413>

Appendix A
Demographic Tool

Demographic Tool For Participants

Please answer the following questions by either filling in the blank or by checking the choice that most closely matches your situation.

Select one: Serving as ☐ Registered Nurse ☐ Other (specify) _____

1. Gender ☐ Male ☐ Female ☐ Other

2. What is your age? _____

3. Please select the Ethnic identity with which you most closely identify (choose one).

☐ White/Caucasian ☐ Black/African American ☐ Hispanic/Latino

☐ Native American ☐ Asian or Pacific Islander ☐ Arabic

☐ Other (specify): _____

4. What is the highest nursing degree you have obtained (choose one)?

☐ Diploma RN ☐ Associate Degree ☐ Doctorate Degree

☐ Baccalaureate Degree ☐ Master's Degree ☐ Other Specify _____

5. What is the highest non-nursing degree you have obtained?

☐ Associate ☐ Baccalaureate ☐ Masters ☐ Doctorate

6. How many years have you practiced as a nurse? _____

7. Which of the following best describes your current (or primary) department (choose one)?

☐ Operating Room ☐ Cardiac Cath Lab ☐ Interventional Radiology

☐ Endoscopy ☐ Special Procedures ☐ Other (specify) _____

8. What is your job classification?

☐ Full-time (32-40 hrs per week) ☐ Part-time (8-36 hours per week) ☐ PRN (as needed but less than 24 hours per week)

9. How many hours per week do you work on call?

☐ 0-10 ☐ 10-25 ☐ 25 or more

10. How many years have you worked on call?

☐ 0-2 ☐ 2-6 ☐ 6-10 ☐ 10-15 ☐ 15 or more

Appendix B
Consent Form

SIGNED CONSENT FORM

Title of Research Study: EXPLORING FACTORS AND CONSEQUENCES OF NURSE FATIGUE IN NURSES WHO WORK ON-CALL SHIFTS

Researcher's Contact Information: Erin Mitchell, 504-221-9099, emitch51@students.kennesaw.edu

Introduction

You are being invited to take part in a research study conducted by Erin Mitchell of Kennesaw State University. Before you decide to participate in this study, you should read this form and ask questions about anything that you do not understand.

Description of Project

The purpose of the study is to explore the factors related to nurse fatigue in nurses who work on-call shifts, as well as determining the consequences of call-shift related fatigue on these nurses

Explanation of Procedures

Participant will be interviewed by primary investigator in a comfortable setting. Interviews will be taped and transcribed.

Time Required

Approximately 30 minutes is needed per interview unless the participant would like to relinquish more details for the study.

Risks or Discomforts

There are minimal risks and/or anticipated discomforts in this study including the stress of recalling the impact of on-call shift work. However, participants can withdraw at any time and for any reason.

Benefits

While there may be no immediate direct benefits to participants, this study can be beneficial to nursing by bridging the gap within nurse fatigue literature and providing more literature specific to nurses who work on-call. This study will provide information to nurses, nurse leaders, and administrators to aide in effectively addressing on-call shift related nurse fatigue.

Confidentiality

The results of this participation will be confidential. Confidentiality will be maintained by limiting access to identifiable information and securely storing data within locked locations or assigning security codes for computerized records. Participants will be assigned a pseudonym that is linked to the interview and demographic data. The key linking interview to the pseudonym will be stored separately from the interview data. Data and documents will be properly deleted three years after the completion of this study or if published, shortly thereafter.

Inclusion Criteria for Participation

Participants must be a Registered Nurse working at least part-time (24 hours per pay period) in an area/unit that requires working on-call shifts.

Signed Consent

I agree and give my consent to participate in this research project. I understand that participation is voluntary and that I may withdraw my consent at any time without penalty.

Signature of Participant or Authorized Representative, Date

Signature of Investigator, Date

PLEASE SIGN BOTH COPIES OF THIS FORM, KEEP ONE AND RETURN THE OTHER TO THE INVESTIGATOR

Research at Kennesaw State University that involves human participants is carried out under the oversight of an Institutional Review Board. Questions or problems regarding these activities should be addressed to the Institutional Review Board, Kennesaw State University, 585 Cobb Avenue, KH3417, Kennesaw, GA 30144-5591, (470) 578-6407.

Appendix C

Interview Guide

Interview Guide

The interview will begin with a review of the description of the study. The researcher will identify her status as a current registered nurse working on-call shifts. The following questions and probing questions are examples of those used in the study interviews:

- Can you tell me about your nursing role(s) in your department?
- What effects, if any, has working on-call had on you?
- What effects, if any, has working on-call had on the people closest to you?
- Have you ever felt like working on-call shifts endangered your life in any way(s)? If yes, explain.
- How has working on-call shifts impacted your health?
- Are there any ways you prepare yourself for these effects ahead of time?
- How do you cope with these effects?

Prompts (if needed):

- Do you have any support with your other non-work-related responsibilities when you are working on-call shifts (like children, pets, etc.)?
- Have you experienced changes in your eating or sleeping habits?
- How has your family life been affected by working on-call shifts?
- How have you adjusted your life to accommodate working on-call shifts?
- Can you tell me more about [situation shared]?

Potential Follow-Up Questions:

- Other participants have described [topic or subject]. Is this something you experienced or feel also?

Closing Questions:

- Is there anything else you can tell me about (situation or topic) that would help me better understand that experience or how you felt?
- Are there questions I have not asked, or topics not addressed, that would help me understand your experiences working on-call shifts?